

## ABSTRACT

A motor/generator system is provided in which a casing (111) of a motor/generator (MG) is connected to a casing (15) of a displacement type expander of a Rankine cycle system, and a rotor (117) of the motor/generator (MG) is supported on a shaft end of an output shaft (32) extending from the expander to the interior of the motor/generator casing (111). Providing communication between an internal space of the expander casing (15), where steam that has leaked from an expansion chamber of the expander is present, and an internal space of the motor/generator casing (111) via a through hole (15a) enables the motor/generator (MG), which reaches a high temperature due to generation of heat in a coil (124), to be cooled by leaked steam that has entered via the through hole (15a), and covering the low temperature expander casing (15) with the high temperature motor/generator casing (111) enables the escape of heat from the expander casing (15) to be minimized, thereby enhancing the efficiency of the expander. It is thus possible to cool effectively the motor/generator connected to the displacement type expander and at the same time minimize the escape of heat from the expander, thereby enhancing the efficiency.